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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,468	08/26/2003	Arul Balasubramaniyan	33692.01.2668	5087

23418 7590 12/16/2005

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EXAMINER	
HAROON, ADEEL	
ART UNIT	**PAPER NUMBER**
2685	

DATE MAILED: 12/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/648,468	BALASUBRAMANIYAN ET AL.	
	Examiner	Art Unit	
	Adeel Haroon	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 15-20* is/are rejected.

7)☒ Claim(s) *9-14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 6, 15, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Portin (U.S. 5,794,159).

With respect to claims 1 and 19, Portin discloses a multiband transmitter circuit in figure 3 (Column 3, lines 64-67). Portin discloses a first oscillator, element number LO1, operative to produce a first output frequency signal defined with a first band of frequencies in response to a transmitter input signal (Column 4, lines 39-42). Portin also discloses a first signal processing circuit, element numbers 52, 54, 56, 58, operatively coupled to the first oscillator circuit to produce the transmitter output signal defined within the first band of frequencies (Column 4, lines 48-51). Portin further discloses a second oscillator, element number LO2, operative to produce a second output frequency signal defined with a second band of frequencies in response to a

transmitter input signal and a corresponding second signal processing circuit, element numbers 52a, 54a, 56a, 58a (Column 4, lines 54-56).

With respect to claim 6, Portin discloses a band selection switch, element number 60b, operative to select the transmitter output signal defined within the first and second band of frequencies (Column 4, lines 57-65). Portin also discloses an antenna, element number 12, operative to transmit the output signal (Column 4, lines 1-4).

With respect to claim 15, Portin discloses a multiband transmitter circuit in figure 3 (Column 3, lines 64-67). Portin discloses a first oscillator, element number LO1, operative to produce a first output frequency signal defined with a first band of frequencies in response to a transmitter input signal (Column 4, lines 39-42). Portin also discloses a first signal processing circuit, element numbers 52, 54, 56, 58, operatively coupled to the first oscillator circuit to produce the transmitter output signal defined within the first band of frequencies (Column 4, lines 48-51). Portin further discloses a second oscillator, element number LO2, operative to produce a second output frequency signal defined with a second band of frequencies in response to a transmitter input signal and a corresponding second signal processing circuit, element numbers 52a, 54a, 56a, 58a (Column 4, lines 54-56). Portin discloses an antenna, element number 12, operative to transmit the output signal (Column 4, lines 1-4). Portin also discloses a processing circuit, element number 60b, operative to select the transmitter output signal defined within the first and second band of frequencies (Column 4, lines 57-65).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2-4, 8, 16, 17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Portin in view of Heinonen et al. (U.S. 2003/0060176).

With respect to claim 2, the multiband transmitter of Portin is described above in the discussion of claim 1. Portin does not expressly disclose the oscillators being VCOs. However, Heinonen et al. disclose multiband transmitter thus making it analogous art since it is in the same field of endeavor. Heinonen et al. teach the use of a VCO in an oscillator circuit (Paragraph 11). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to include a VCO in the first and second oscillator circuits as taught by Heinonen et al. in the multiband transmitter of Portin in order to have more control of the oscillator circuits.

With respect to claim 3, the modified multiband transmitter of Portin and Heinonen et al. is described above in the discussion of claim 2. Portin further discloses a power reduction circuit, element number 60b, operatively coupled to the first and second signal processing circuits. Portin discloses reducing the power of the first and second signal processing circuits in response to a power control signal corresponding to in which frequency band the transmitter is transmitting (Column 4, lines 57-65). Portin does not disclose reducing the power of the VCOs. However, Heinonen et al. teach reducing the power of a VCO when not in use (Paragraph 12). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to apply Heinonen et al's VCO power reducing technique in the modified multiband transmitter of Portin and Heinonen et al. especially since Portin already has a power reducing circuit in order to conserve power in the oscillator circuits.

With respect to claim 4, the modified multiband transmitter of Portin and Heinonen et al. is described above in the discussion of claim 2. Portin further discloses a power reduction circuit, element number 60b, operatively coupled to the first and second signal processing circuits. Portin discloses reducing the power of the first and second signal processing circuits in response to a power control signal corresponding to in which frequency band the transmitter is transmitting (Column 4, lines 57-65). A band selection circuit is inherently present in Portin's transmitter circuit in order to control the power reducing circuit since it is dependent on band selection information. Portin does not disclose reducing the power of the VCOs. However, Heinonen et al. teach reducing the power of a VCO when not in use (Paragraph 12). Therefore, it would be obvious to

one of ordinary skill in the art at the time of the applicant's invention to apply Heinonen et al's VCO power reducing technique in the modified multiband transmitter of Portin and Heinonen et al. especially since Portin already has a power reducing circuit in order to conserve power in the oscillator circuits.

With respect to claim 8, Portin discloses that the oscillator signal is a multiple, the multiple being 1, of the transmitter output signal at frequency defined in the first band and second band of frequencies.

With respect to claim 16, the multiband transmitter of Portin is described above in the discussion of claim 15. . Portin further discloses a power reduction circuit, element number 60b, operatively coupled to the first and second signal processing circuits. Portin discloses reducing the power of the first and second signal processing circuits in response to a power control signal corresponding to in which frequency band the transmitter is transmitting (Column 4, lines 57-65). Portin does not expressly disclose the oscillators being VCOs and reducing the power of the VCOs. However, Heinonen et al. disclose multiband transmitter thus making it analogous art since it is in the same field of endeavor. Heinonen et al. teach the use of a VCO in an oscillator circuit (Paragraph 11). Heinonen et al. also teach reducing the power of a VCO when not in use (Paragraph 12). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to apply Heinonen et al's VCO power reducing technique in the modified multiband transmitter of Portin and Heinonen et al. especially since Portin already has a power reducing circuit in order to conserve power in the oscillator circuits.

With respect to claim 17, the multiband transmitter of Portin is described above in the discussion of claim 15. . Portin further discloses a power reduction circuit, element number 60b, operatively coupled to the first and second signal processing circuits. Portin discloses reducing the power of the first and second signal processing circuits in response to a power control signal corresponding to in which frequency band the transmitter is transmitting (Column 4, lines 57-65).). A band selection circuit is inherently present in Portin's transmitter circuit in order to control the power reducing circuit since it is dependent on band selection information. Portin does not expressly disclose the oscillators being VCOs and reducing the power of the VCOs. However, Heinonen et al. disclose multiband transmitter thus making it analogous art since it is in the same field of endeavor. Heinonen et al. teach the use of a VCO in an oscillator circuit (Paragraph 11). Heinonen et al. also teach reducing the power of a VCO when not in use (Paragraph 12). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to apply Heinonen et al's VCO power reducing technique in the modified multiband transmitter of Portin and Heinonen et al. especially since Portin already has a power reducing circuit in order to conserve power in the oscillator circuits.

With respect to claim 20, the method of Portin is described above in the discussion of claim 19. Portin further discloses a power reduction circuit, element number 60b, operatively coupled to the first and second signal processing circuits. Portin discloses reducing the power of the first and second signal processing circuits in response to a power control signal corresponding to in which frequency band the

transmitter is transmitting (Column 4, lines 57-65). Portin does not disclose reducing the power of the oscillators. However, Heinonen et al. teach reducing the power of an oscillator when not in use (Paragraph 12). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to apply Heinonen et al's oscillator power reducing technique in the modified multiband transmitter of Portin and Heinonen et al. especially since Portin already has a power reducing circuit in order to conserve power in the oscillator circuits.

5. Claims 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Portin and Heinonen et al. further in view of Gardner (U.S. 6,466,803).

With respect to claim 5, the modified multiband transmitter of Portin and Heinonen et al. is described above in the discussion of claim 2. Neither Portin nor Heinonen et al. disclose a synthesizer. However, Gardner discloses multiband transmitter thus making it analogous art since it is in the same field of endeavor. Gardner teaches a synthesizer, element number 52 and 64, that receive the first and second VCO output frequency signals and also provide the transmitter input signals via element numbers 56, 1, and 2, in figure 2 (Column 4, lines 47-49). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to apply Gardner's synthesizer technique in the modified multiband transmitter of Portin

and Heinonen et al. in order to have feedback from the oscillator circuits to better match the frequencies of the transmitter.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Portin.

With respect to claim 7, the multiband transmitter of Portin is described above in the discussion of claim 1. Portin does not specifically disclose the frequency bands of its dual band transmitter. However, the frequency bands 824MHz-915MHz and 1710 MHz to 1910MHz encompass well known frequency bands in the telecommunications industry such as GSM and DCS. Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to have Portin's multiband transmitter operate on these two frequency bands in order to be compatible with the well-known telecommunication standards.

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Portin in view of Gardner (U.S. 6,466,803).

With respect to claim 18, the modified multiband transmitter of Portin and Heinonen et al. is described above in the discussion of claim 15. Portin does not disclose a synthesizer. However, Gardner discloses multiband transmitter thus making it analogous art since it is in the same field of endeavor. Gardner teaches a synthesizer, element number 52 and 64, that receive the first and second VCO output

frequency signals and also provide the transmitter input signals via element numbers 56, 1, and 2, in figure 2 (Column 4, lines 47-49). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to apply Gardner's synthesizer technique in the multiband transmitter of Portin in order to have feedback from the oscillator circuits to better match the frequencies of the transmitter.

Allowable Subject Matter

8. Claims 9-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The specific technique of using a first and second divide by N circuit in junction with a first and second linear and nonlinear modulation circuits was neither found nor fairly suggested in the prior art.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Maegawa et al. (U.S. 6,269,253) discloses a multiband transmitter using two oscillators. Young (U.S. 6,643,522) discloses a dual mode transmitter with separate circuitry for the bands.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adeel Haroon whose telephone number is (571) 272-7405. The examiner can normally be reached on Monday thru Friday, 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AH
12/9/05